I DEPARTMENT/AGENCY LSU Medical Center

II PROJECT TITLE
LOUISIANA PATIENT IDENTIFICATION (BIOMETRICS) AND TRACKING (BARCODING) PROJECT

III PROJECT LEADER

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IV DESCRIPTION OF THE PROJECT

The LSU Medical Center is committed to improving the provision of healthcare services to all Louisianans. Technology enhancements and innovations are at the center of LSU Medical Center's strategic plan to fundamentally reform the Public Hospital System. A next generation clinical information system will be rolled out in the coming 2 years that will provide crucial medical information to the point of care, as
well aggregate data for medical research, outcomes measurement, and continuous quality improvement. This computer-based system of medical records will also interface with our administrative systems, which currently perform eligibility checking, billing, and other functions. Our goal is system integration, which in turn makes business re-engineering possible. In order for this approach to succeed, it must have accurate data input and airtight security. Health data is centered around individual patients; we must, therefore, authenticate their identities. The ability to authenticate patient identities will also increase our ability to verify eligibility status for services. As we place clinical information online, it is also imperative that we provide a logical security solution that will protect information at the workstation level.

Proposal
The LSU Medical Center has been awarded an 862,000 grant from the Louisiana Technology Innovations Fund to implement a biometric identification system for patient identification and workstation security, as well as a barcode inpatient tracking system. Patients will be enrolled using a special digital scan of the fingertip that will immediately converted to a twelve digit number; that number will be entered into
our Master Patient Index. Patients' identities will be verified in the future using this system, which eliminates problems of similar or same names, unknown identity (unconscious, altered mental status), and false identity use. This identification system will

give clinicians the ability to immediately access the correct patient's medical information such as allergies and past medical history from our Clinical Data Repository. In addition, we will then search online databases for Medicaid, Medicare, and private insurance eligibility, thereby generating 1.5 million dollars annually for every percent of patients that our system currently misidentified as "free care". *

The LSU Medical Center will utilize this same biometric technology to restrict access to electronic health information. All providers in the Public Hospital System will use a biometric reader as the password system for logging on to a workstation. This system prevents theft or "lending" of passwords; each individual doctor or nurse must logon using his or her personal identifiable characteristic (fingertip scan). **This project will significantly enhance the privacy of our patients**.

The LSU Medical Center will also implement an inpatient patient tracking and data collection system using barcode technology. Patient bracelets will have barcodes placed on them, which will allow for quick scans to denote patient departure and arrival and different areas of the hospital, thus improving census and bed status information. Barcode scanners will also be programmed to enter vital signs, thus allowing for an inexpensive, portable, and proven solution to capturing clinical information. This information can then be entered into the patient's electronic database in a seamless manner.

V PROJECT STATUS

### A.	Brief Summary

The Biometric Identification Project has progressed from a functional and technical standpoint. LSU Health Sciences Center has continued to work with the vendor Integrated Visions to biometrically enable patient registration and workstation security. We had made significant progress in both the technical and functional standpoint; we are now preparing for a pilot project in the Medical Center of Louisiana Internal Medicine Clinic.

In deciding whether to first tackle patient identification or workstation security first, we chose workstation security. Since we will be asking patients to give us their electronic fingerprints, we believe that our physicians should do the same thing first, in the name of protecting the privacy of medical records. We do not want to ask the patients to do something that we are not willing to do first ourselves. Second, we are in the process of changing our registration software systems to accommodate the Medicaid Eligibility Verification System.

Workstation security software design has been worked on by a team consisting of the Integrated Visions personnel and the most senior IT staff at LSUHSC: David Troendle, Assistant Vice Chancellor for Information Technology, Bart Ponze, Director Enterprise Services, Greg Speyer, Director of IT for the Health Care Services Division, Dr. Richard Ferrans, Chief of Medical Informatics and Telemedicine, and Wayne Wilbright, Assistant Professor, Medical Informatics and Telemedicine. The Integrated Visions staff has made monthly trips to New Orleans, and the LSUHSC staff has visited their facilities in Sebastian, Florida. We have also had biweekly conference calls.

Development has been completed to meet the specific enterprise wide security needs of the LSU Health Sciences Center. Beta testing will begin October 15, and a pilot project in the MCLNO Medicine Clinic is anticipated begin in November 1999. Approximately 20 NT workstations running thin client software will be secured with biometrics, and all nurses, clerks, and physicians at the clinic will need to log on biometrically to register patients check lab results, reports, and perform scheduling. MCLNO IT supporters will implement and support the pilot project, and will receive on site training and support from Integrated Visions Implementation Team staff.

The first part of development and testing involved developing functional specifications for usability. Specifically, we determined limits on false positive and false negative biometric logins. Data from two hospitals using biometrics was analyzed. A base rate of three in one million chance of logging in falsely, using electronic fingerprints. A base rate of five percent false negative rate was also established. This means that out of one hundred people logging in, five people will not be able to enter on their first try. On their second try, four will be able to enter by adjusting their finger position on the scanner. One in one hundred may have to try a third time, or at worst call the help desk for assistance. This has enabled us to predict support staffing for MCLNO.

Less than three percent of a general population is unenrollable, meaning that their fingers are so smooth that they do not support biometric enrollment. Current development is aimed at lowering this to less than one percent by years end. We have established procedures for dealing with staff that are unenrollable; these same procedures will be used when registering patients.

With regards to specific workstation security LSUHSC personnel assisted in the redesigning of SafeNT, now known as Biolock. We determined that there was a need for two-tiered security in the enterprise: non-biometric security for access to administrative tools, email, and other functions, and biometric security for access to clinical data. This essentially involves creating a dual identity for clinical personnel: a person identity and clinician identity. For security purposes, we did not want personnel to know their secure user id for clinician identity, so the following system was devised to address this. First, the user enters their userid, and indicates whether or not they wish to access clinical data. If they want non-clinical access, the system prompts them for a password. If they request clinical access the system prompts them for a biometric password (i.e. fingerprint). If the fingerprint is correct, the system will map the userid / biometric password pair to a second clinical userid and logs the person onto the system as the second userid, which has

clinical access privileges. For example, Sally Jones logs on biometrically would enter the system as Nurse Sally Jones, a userid unknown to her. If a person attempts to log on to clinical data from a workstation that does not have biometric hardware, then they will be prevented from accessing clinical data.

These system changes are significant because they involve changes that affect Windows NT Security, the standard for security used in millions of computers. Integrated Visions staff has been working with Microsoft Security personnel to ensure that these changes can be incorporated easily into their security framework. David Troendle also made a formal request to Microsoft to make changes to their NT security for the upcoming Windows 2000 (NT 5) to enable the security component to determine whether or not a person is logging in biometrically or not, so that the dual userid mapping protocol can be eliminated in the future.

These important system modifications accomplish several things. First, it allows us to lock up clinical data without requiring biometrics for access to any desktop application. This would be unnecessary and cost prohibitive. Second, it allows for secure remote access to clinical data. This is important as we begin to allow affiliates to access discharge summaries, lab results, and reports. Biometrics will enable us to have the strongest possible user authentication system for offsite users, and we will have audit trails that will meet the requirements of HHS that will be issued in November as part of the Health Insurance Portability and Accountability Act of 1996.

The vendor that has incorporated these changes has benefitted from adopting the thin client architecture and dual userid flexibility in conjunction with LSUHSC. Integrated Visions was just awarded the Microsoft Health Care Industry Solutions Award for 1999.

The larger rollout of biometric security is intended for 2000. We intend to implement across MCLNO 700 workstations, followed by installations at other Public Hospitals. The timing of this implementation will coincide with the rollout of the thin client computers across the enterprise.

With respect to patient registration, the first component of this system was to enable MEVS, or Medicaid Eligibility Verification System. MEV is now operational, and we anticipate approval in the next two weeks from the Executive staff of LSUHSC to begin work on registration redesign that will incorporate MEVS. Functional and technical specification of the registration system have been discussed at length, and estimation of resources to complete is now underway. This would be followed by incorporation of biometric enrollment. The methods of incorporating biometrics into our registration process have been thoroughly discussed at a technical level and are well understood. Our new open architecture registration application will make calls to the API (Application Programming Interface) of the Safe NT. We are working with STC, the vendor that has provided us with Master Patient Index and Interface Engine Software regarding how to incorporate their Master Patient Index and Universal Registration Module into a registration program using APIs.

With respect to barcode tracking, we have acquired several Windows CE handheld devices for testing that will have a small barcode scanner attached. Testing is now underway with respect to choosing the appropriate unit for tracking, and vital sign entry. . Our staff will develop the CE applications that will interact with the barcode to enable patient tracking.

LSUHSC staff has publicized this important effort by the Technology Innovations Council in using biometrics for patient identification and workstation security. Dr. Ferrans has discussed this project at the National Committee for Vital and Health Statistics, where he is staff to the Workgroup for Computer Based Patient Records. Dr. Ferrans has also given a summary of the project during his presentation to the Southern Governors Association; Dr. Ferrans was appointed by Governor Foster to represent Louisiana at the Task Force on Medical Technology. In addition, Dr. Ferrans highlighted biometric security in his written and oral testimony to the United States Senate Commerce Committee (Science and Technology Subcommittee). The testimony specifically references use of fingerprint scanning, and the funding from the Technology Innovations Council.

B.   Accomplishments

- Functional requirements met
- Technical requirements met
- Changes made with respect to NT security
- Dual id system developed, ready for beta testing
- High level Technical and functional specifications for registration established
- Beta test planning initiated
- Windows CE Unit testing initiated
- Publicity of project at level of Southern Governors and United States Senate

C.   Problems Encountered/Action Taken or Planned
- Dual id system needed/ Dual id system developed
- Registration redesign delayed/ approval pending

D.   Major Milestones (Original vs. Current Estimate)
- Biometric security implementation- 13 months- 15 months
- Bar Code development – completed at 10 months/ 16 months
- Biometric registration implementation 13 months- 18 months

VI   **COST VS. BUDGET**

	Category	Budgeted	Actual	Projected Surplus
A.	Equipment	651,000	651,000	0
B.	Software	212,000	212,000	0
C.	Telecommunications	0	0	0
D.	Professional/Contract Services	0		
E.	Other Costs	0		
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	Total Project Cost	**863,000**	**0**	**0**

VII   **ITEMIZED EXPENSES AND FINANCIAL OBLIGATIONS INCURRED DURING THIS REPORTING PERIOD**
Contract Title: Biometric ID System
PO Number # M23427/M23431/M23432/M440
Biometric hardware and software acquisition is currently under negotiation between Integrated Visions and the Office of Computer Services. Beta testing will occur at no cost to LSUHSC.
* denotes receipt of item pending

Quant	Description:	Unit Cost	Total
1	Casio E-100 Palm PC- 490	490	490
1	Casio Cassiopeia E-11	294	294
1	Compaq- Consumer Aero	476	476
2	Phillips Mobile Nino 510	425	850
1	Phillips Mobile Nino 210	292	292
1	Phillips Nino Modem	139	139
3	Bar Code Wand Cards Windows CE	324	0*
1	15 MB Compact Flash PCMCIA	75	75
Total			**2126.00**